

# 2013 Davis-Monthan Annual Water Quality Report

The 355th Bioenvironmental Engineering Flight (BEF) and the 355th Civil Engineer Squadron (CES) are pleased to present to you the 2013 Annual Water Quality Report for Davis-Monthan Air Force Base. This report, also known as the Consumer Confidence Report, is required by the Safe Drinking Water Act (SDWA) and is designed to provide details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. This report will inform you about the quality water and services we deliver to you every day. Our mission is to provide you with a safe and dependable supply of drinking water.

## IS MY WATER SAFE?

Yes, your water is safe! We are pleased to report that the results from the monitoring conducted in 2013 met all standards for safe drinking water. Please read below to get a detailed look at the Davis-Monthan drinking water program and what the Davis-Monthan Drinking Water team does for you every day.

## WHERE DOES MY WATER COME FROM?

Davis-Monthan AFB supplies drinking water to around 13,500 customers/base residents each and every day. This water is pulled directly from the Fort Lowell Aquifer via eight groundwater wells located across the base, and is monitored and maintained by personnel from the 355th Fighter Wing.

## SOURCE WATER ASSESSMENT AND ITS AVAILABILITY

All drinking water is chlorinated for disinfection purposes. Disinfection involves the addition of chlorine to kill bacteria and microorganisms that may be in the water. On a monthly basis, the 355th BEF monitors the base drinking water to ensure chlorination, acidity, and bacteriological contamination levels fall within an acceptable range. Additional sampling is performed on a periodic basis for other contaminants to ensure our drinking water remains compliant with safety regulations set by the United States Environmental Protection Agency (USEPA).

## WHY ARE THERE CONTAMINANTS IN MY DRINKING WATER?

As water travels across the surface of the land or dissolves through the ground, it picks up naturally occurring minerals and, in some cases, naturally occurring radioactive materials. Additionally, it can pick up any number of substances resulting from the presence of animals or human activity. These range from viruses or bacteria found in water treatment plants and septic systems, inorganic and organic compounds either naturally occurring or as the result of industrial operations, and chemical contaminants such as pesticides and herbicides from farms. The USEPA sets safety limits on these contaminants in public water systems in order to ensure safe drinking water is provided to the consumer.

Additionally, drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (800-426-4791) between 1000-1600 hours daily. A brief description of each contaminant detected in your water is included later in this report.

## DO I NEED TO TAKE SPECIAL PRECAUTIONS?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS, the elderly and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. In addition, USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the

risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

### WERE THERE ANY MONITORING FAILURES OR VIOLATIONS?

There were no monitoring failures or violations during 2013. In the event that a violation or waterborne emergency occurs, the Davis-Monthan Drinking Water team will deliver information about protecting community health through the media, mailings, the web page, and other alert systems.

### WERE THERE ANY CONTAMINANTS DETECTED IN MY DRINKING WATER?

All sources of drinking water contain some naturally occurring contaminants. In order to ensure that tap water is safe to drink, the USEPA prescribes regulations which limit the amount of contaminants allowed in water provided by public water systems. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels. The table below lists all of the drinking water contaminants that we detected during the period of January 1 to December 31, 2013. The USEPA or the State requires us to monitor for certain contaminants less than once per year either because the concentrations of these contaminants do not vary significantly from year to year or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old. For the majority of regulated contaminants that were not detected, they were not included in the table. Thus, only those substances listed below were found in your water. In this table you will find terms and abbreviations that might not be familiar to you. To help you better understand these terms, we have provided the definitions in the last two tables.

**Detected Contaminants Table**

| <u>Contaminant</u>                   | <u>MCLG</u> | <u>MCL</u> | <u>RAA</u> | <u>Range</u> | <u>Sample Year</u> | <u>Violation</u> | <u>Typical Source</u>   |
|--------------------------------------|-------------|------------|------------|--------------|--------------------|------------------|---|
| <b>Disinfection By-Products</b>      |             |            |            |              |                    |                  |   |
| Total Trihalomethanes [TTHMs] (ppb)  | None        | 80         | 4.1        | <2.0-5.1     | 2013               | No               | By-product of drinking water disinfection (Chlorination)                                    |
| Haloacetic Acids [HAA5] (ppb)        | None        | 60         | <1.8       | <1.8         | 2013               | No               | By-product of drinking water disinfection (Chlorination)                                    |
| <b>Inorganic Contaminant</b>         |             |            |            |              |                    |                  |   |
| Arsenic (ppb)                        | 0           | 10         | 2.6        | 1.2-2.6      | 2012/2013          | No               | Erosion of natural deposits, run offs   |
| Barium (ppm)                         | 2           | 2          | 0.074      | ND-0.074     | 2012/2013          | No               | Erosion of natural deposits, industrial use   |
| Sodium (ppm)                         | None        | None       | 32         | 30-32        | 2012/2013          | N/A              | Erosion of natural deposits   |
| Nitrate [measured as Nitrogen] (ppm) | 10          | 10         | 1.0        | ND-1.0       | 2013               | No               | Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits |

| Radioactive Contaminant                          |                     |                       |  |                               |                                      |  |                             |
|--|---------------------|-----------------------|--|-------------------------------|--------------------------------------|--|-----------------------------|
| Alpha emitters (pCi/L)                           | 0                   | 15                    | 2.5  | 0.1-2.5                       | 2012                                 | No   | Erosion of natural deposits |
| Uranium (pCi/L)                                  | 0                   | 30                    | 3.6  | 0.6-3.6                       | 2012                                 | No   | Erosion of natural deposits |
| <u>Contaminants</u>                              | <u>MCLG</u>         | <u>AL</u>             | <u>90<sup>th</sup> percentile</u>            | <u>Sample Date</u>            | <u># Samples Exceeding AL</u>        | <u>Typical Source</u>  |                             |
| Copper - action level at consumer taps (ppm)     | 1.3                 | 1.3                   | 0.13   | 2012                          | 0                                    | Corrosion of household plumbing systems; Erosion of natural deposits |                             |
| Lead - action level at consumer taps (ppb)       | 0                   | 15                    | 0  | 2012                          | 0                                    | Corrosion of household plumbing systems; Erosion of natural deposits |                             |
| <u>Contaminant</u>                               | <u>Year Sampled</u> | <u>Annual Average</u> | <u>Monthly Average Range</u>                 | <u>MRDLG</u>                  | <u>MRDL</u>                          | <u>Source</u>  |                             |
| Chlorine (ppm)                                   | 2013                | 0.54                  | 0.36 – 0.97                                  | 4                             | 4                                    | Disinfection additive used to control microbes                       |                             |
| <u>Contaminant</u>                               | <u>MCLG</u>         | <u>MCL</u>            | <u>Highest monthly # of positive samples</u> | <u># of Samples per month</u> | <u>Typical Source</u>                |  |                             |
| Microbiological                                  |                     |                       |  |                               |                                      |  |                             |
| Total Coliform Bacteria (positive samples/month) | 0                   | 1                     | 0  | 15                            | Naturally present in the environment |  |                             |

| <b>IMPORTANT DRINKING WATER TERMS AND DEFINITIONS</b> |  |
|---|--|
| <b>Term</b>   | <b>Definition</b>  |
| ppm   | Parts Per Million. One ppm equals one milligrams per liter (mg/L) or 1,000 times more than a ppb   |
| ppb   | Parts Per Billion. Some constituents in water are measured in very small units. One ppb equals one micrograms per liter (µg/L)   |
| pCi/L   | Picocurie Per Liter. It is defined as the quantity of radioactive material in one liter which produces 2.222 nuclear disintegrations per minute  |
| N/A   | Not Applicable   |
| ND  | Not detected   |
| AL  | Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.  |
| MCL   | Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology. If a contaminant is believed to cause health concerns in humans, then the MCL is set as close as practical to zero and at an acceptable level of risk |
| MCLG  | Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.   |

|       |  |
|-------|--|
| MRDL  | Maximum Residual Disinfectant Level: The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.                             |
| MRDLG | Maximum Residual Disinfection Level Goal: The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants. |
| RAA   | Running Annual Average of the results  |

## DETAILED INFORMATION ON CONTAMINANTS

**Haloacetic Acids (HAA5)** are a group of chemicals that are formed along with other disinfection-by-products when chlorine or other disinfectants used to control microbial contaminants in drinking water react with naturally occurring organic and inorganic matter in water. The regulated haloacetic acid compounds, known as HAA5, are: monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid. USEPA has established an MCL of 60 parts per billion for HAA5. Compliance with the HAA5 standard is based on the running annual average concentration.

**Total Trihalomethanes (TTHMs)** are formed when chlorine combines with naturally occurring organic material in water. Since the level of organic matter in our groundwater is extremely low, these compounds are found at very low concentrations. The compounds which make up the TTHMs include: bromodichloromethane, bromoform, chlorodibromomethane, and chloroform. Compliance with the TTHM standard is based on the running annual average concentration.

**Arsenic** is a naturally occurring substance commonly found in groundwater in the southwestern United States. While your drinking water meets USEPA's standard for arsenic, it does contain low levels of arsenic. USEPA's standard balances the current understanding of arsenic's possible health effects against the cost of removing arsenic from drinking water.

USEPA continues to research the health effect of low levels of arsenic which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

**Barium** occurs naturally at very low concentrations in our groundwater.

**Fluoride** is an important naturally occurring mineral that helps to form healthy teeth and bones. A concentration of 1 ppm is considered optimum. At concentrations above 2 ppm, fluoride can cause mild discoloration of teeth, and exposure at above the MCL of 4 ppm can cause both severe discoloration of teeth and over many years of exposure, bone disease.

**Nitrate** is a form of nitrogen and an important plant nutrient. Nitrate in drinking water at levels above 10 ppm is a health risk for infants less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, ask advice from your health care provider.

**Sodium** is the sixth most abundant element on Earth and is widely distributed in soils, plants, water, and food. A goal of 2300 mg/day dietary sodium has been proposed by several government and health agencies. Drinking water containing between 30 and 60 ppm would contribute only 2.5 % to 5% of the dietary goal if tap water consumption is 2 liters per day. Currently, there is no MCL for sodium in

drinking water. The recommended EPA guidance level for individuals on a very low sodium diet (500 mg/day) is 20 ppm in drinking water. Drinking water does not play a significant role in sodium exposure for most individuals. Those who are under treatment for sodium-sensitive hypertension should consult with their health care provider regarding sodium levels in their drinking water supply and the advisability of using an alternative water source or point-of-use treatment to reduce the sodium.

**Alpha emitters** are a measure of radioactivity due to naturally occurring minerals in groundwater. This excludes the radioactivity contributed by either radon or uranium.

**Radium 226 and 228** are two of the most common radium isotopes. Radium is a naturally occurring radionuclide, formed by the decay of uranium or thorium in the environment. It occurs at low concentrations in virtually all rock, soil, water, plants, and animals.

**Uranium** is a metallic element which is highly toxic and radioactive.

**Lead and Copper** are naturally occurring metals which are generally found at very low levels in source waters. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The BEF is responsible for providing high quality drinking water, but cannot control the variety of materials used in

plumbing components. If water in your home has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested.

Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

**Chlorine Residual Disinfection** is maintained throughout the distribution system. Chlorine is added to the drinking water supply at well sites to provide assurance that water delivered to customers will remain free of microbiological contamination. This also ensures that the water meets microbiological drinking water standards from the time it is pumped from the ground until it reaches the customer's tap. Chlorine Residual Disinfectant is measured five days a week from each well and monthly from the sample stations where the bacteriological samples are collected. The annual chlorine residual disinfectant is calculated using the monthly chlorine averages for the past 12 months.

**Coliform Bacteria** are commonly found in the environment and in the digestive tract of animals. While rarely harmful, coliform bacteria in drinking water are indicators that the water may also contain harmful microorganisms. In 2013, there were zero positive total coliform samples for the entire year. (The MCL is 1 per month.)

## HOW CAN I GET INVOLVED?

We would like you to understand the efforts we make to continually improve the water treatment process and protect our water resources. The Davis-Monthan Drinking Water Quality Program team members are committed to ensuring your water remains as clean as possible. If you would like additional information concerning this report, or if you have any questions about our drinking water program, please feel free to contact the Davis-Monthan Drinking Water team members directly and we will be happy to assist you in any way we can. The Bioenvironmental Engineering Flight can be reached directly at 520-228-5369. In addition, the Civil Engineer Customer Service desk is available by calling 520-228-5503. They can help direct you to who would best be able to answer your questions. If there are any base housing consumer complaints regarding housing drinking water, please contact Soaring Heights Property Manager at 520-748-3339.

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